

USSR

UDC: 621.396.6-181.5

ROZE, R. F., KOKORISH, Ye. Yu., LAMEKIN, V. F., PROKHOROV, V. K.,
and ROZHUKLINS, P. P.

"Integrated Microcircuits for Communications Equipment"

Elektron. tekhnika, Nauchno-tekhn. sb. Mikroelektronika (Electronic Engineering, Scientific-Technical Collection, Microelectronics)
1970, No. 2(23), pp 5-11 (from RZh-Radiotekhnika, No. 3, March 71,
Abstract No. 3V237)

Translation: The directions and perspectives of developments in
hybrid-film and semiconductor microsystems are evaluated. Author's
abstract

1/1

USSR

UDC 621.382.3

PONDUR, P.A., AKMENTYR'SH, YA.YA., BERZIN'SH, A.A., DANE, B.YA., ZOBENS, V.YA.,
KOKORISH, YE. YU., KURMIT, YA. A.

"Silicon Low-Noise High-Frequency Unencapsulated Transistors"

Elektron. tekhnika. Nauchno-tekhn. sb. Mikroelektronika (Electronic Technology.
Scientific-Technical Collection. Microelectronics), 1970, Issue 2(23), pp 81-
86 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No
4B245)

Translation: The construction, technology, and principal parameters are described of silicon planar unencapsulated low-noise high-frequency n-p-n type transistors for hybrid circuits.

1/1

USSR

UDC: 621.395.664.12

KOKOSHKIN, V. P., SHAVRIN, S. F., SERGEYEV, M. V., FURSOVA, G. V.

"A Compander Echo Suppressor"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, Apr 72, Author's Certificate No 333715, Division H, filed 12 May 70, published 21 Mar 72, p 229

Translation: This Author's Certificate introduces a compander echo suppressor which contains a rectifier amplifier, and an expander and compressor with controlled two-terminal pair network. As a distinguishing feature of the patent, the operational reliability of the compander echo suppressor is improved with simultaneous simplification by connecting the input of the expander through the rectifier amplifier to the neutral points of the controlled two-terminal pair network of the compressor. The circuit of the controlled compressor is also connected to the neutral points of the same two-terminal pair network.

1/1

1/2 026 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--STUDY OF THE PROPAGATION OF LONGITUDINAL WAVES IN A POLYETHYLENE
BAR -U-
AUTHOR-(02)-KOKGSHVILI, S.M., KALNIN, P.P.
COUNTRY OF INFO--USSR
SOURCE--MEKHANIKA POLIMEROV, VOL. 6, JAN.-FEB. 1970, P. 59-67
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--POLYETHYLENE, DIGITAL COMPUTER, VISCO ELASTICITY, MECHANICAL
STRESS, LONGITUDINAL WAVE, CALCULATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/1895 STEP NO--UR/0374/70/006/000/0059/0067
CIRC ACCESSION NO--AP0112875
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112875

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE PROPAGATION OF LONGITUDINAL WAVES IN A LONG POLYETHYLENE BAR IN TERMS OF THE BOLTZMAN VOLTERRA EQUATION. A NUMERICAL SOLUTION OF THIS PROBLEM IS OBTAINED BY MEANS OF A DIGITAL COMPUTER. CALCULATED RESULTS ARE COMPARED WITH EXPERIMENTALLY OBTAINED DATA. USING THE MODEL OF A VISCOUS ELASTIC STANDARD BODY, DYNAMICAL STRESS STRAIN DIAGRAMS ARE CONSTRUCTED FOR THE CASE OF WAVE PROPAGATION IN A PRESTRETCHED BAR. FACILITY: AKADEMIIA NAUK LATVIISKUI SSR, INSTITUT MEKHANIKI POLIMEROV, RIGA, LATVIAN SSR.

UNCLASSIFIED

1/2 040 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--DYNAMIC LOADING OF POLYMER MATERIALS -U-
AUTHOR-(03)-KOKOSHVILI, S.M., TAMUZS, V., SHAPIRO, G.S.
COUNTRY OF INFO--USSR
SOURCE--MEKH. POLIM. 1970, 6(2), 326-38
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, CHEMISTRY, PHYSICS
TOPIC TAGS--DYNAMIC STRESS, POLYMER, PLASTIC MECHANICAL PROPERTY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3006/0900 STEP NO--UR/0374/70/006/002/0326/0338
CIRC ACCESSION NO--AP0134629

UNCLASSIFIED

2/2 040

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134629

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW WITH 80 REFS. DESCRIBING
TEST METHODS AND THE THEORETICAL STUDIES DEALING WITH THE MECH.

PROPERTIES AND THE PROPAGATION OF DYNAMIC STRESS WAVES IN POLYMERS.

FACILITY: INST. MEKH. POLIM., RIGA, USSR.

UNCLASSIFIED

USSR

UDC: 621.311.21.004(282.251.2)

BOCHKIN, A. E., LISKUN, E. E., EPIFANOV, A. P., KOKOT,
D. M., STARSHINOV, S. N., Engineers

"On Condition of Krasnoyarskaya GES Dam during First Years
of Operation"

Moscow, GidrotekhnicheskoyeStroitel'stvo, No. 4, April,
1971, pp 12-19

Abstract: The subject dam is 124 meters high. It has a
triangular cross-section. The upstream face is vertical.
It rests on granite rock.

Measures were taken to prevent crack formation by
controlling the temperature regime. 1,289 cracks were
detected on the piers during the period from 1961 to 1968,
which is one-third the number of cracks on Bratskaya GES.

Joints between blocks were periodically inspected
ultrasonically for three years after being cemented. Most
of them showed increased strength, 20% indicated a slight
opening of the joint near the edge.

1/2

USSR

BOCHKIN, A.E., et al, Gidrotekhnicheskoye Stroitel'stvo, No 4, April 1971,
pp 12-19

The filling of the reservoir started in 1967 and was completed in 1969. Temperature of water at various depths was monitored.

Seeping of water was observed because it is an indication of tension stresses on the upstream face. The seeping decreased from 1967 to 1969.

Vertical and horizontal displacements of various points of the dam were determined optically. Measurements indicated the settling of the foundation on the upstream face of the dam, probably due to the weight of water. Horizontal displacements reached 15 mm.

2/2

Acc. Nr.

AP0034144

Abstracting Service:

CHEMICAL ABST. 4-70

Ref. Code

UR 0078

K

74275b Reaction of a double molybdate of lanthanum and an alkali metal with alkali metal molybdates in melts. Mokhosoev, M. V.; Kokot, I. F.; Lutsyk, V. I.; Kononenko, I. S. (USSR). *Zh. Neorg. Khim.* 1970, 15(1), 271-5 (Russ). Phase diagrams of the system $MLa(MoO_4)_2-M_2'MoO_4$ (where $M = M' = Li, Na, K, Rb, Cs$) are constructed. Systems with Li and Cs salts are simple eutectic systems, with eutectic contg. 90 and 67 mole % $M_2'MoO_4$, m. 660 and 740°, resp. The remaining systems form the following compds.: incongruently, m. 680° $Na_3La(MoO_4)_4$, and congruently m. 860 and 835° $K_3La(MoO_4)_4$ and $Rb_3La(MoO_4)_4$, resp. HMJR

1/1

18 dr

REEL/FRAME
19710791

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--REACTION OF MOLYBDENUM TRIOXIDE WITH ALKALI METAL SULFATES IN MELTS
-U-

AUTHOR--(03)-KOKOT, I.F., MOKHOSOV, M.V., KISEL, N.G.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TSVET. MET. 1970, 13(1), 87-90.

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--X RAY ANALYSIS, PHASE DIAGRAM, METAL COMPLEX COMPOUND,
EUTECTIC MIXTURE, MOLYBDENUM OXIDE, LITHIUM COMPOUND, POTASSIUM
COMPOUND, SULFATE, SODIUM SULFATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--43003/1511

STEP NO--0149/70/013/001/0087/0090

CIRC ACCESSION NO--AT0130440

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0130440

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY DTA AND X RAY ANAL. THE PHASE
DIAGRAMS WERE DETD. FOR LI SUB2 SO SUB4NEGATIVE MOD SUB3 NA SUB2 SO
SUB4 MOD SUB3, AND K SUB2 SO SUB4 MOD SUB3. LI SUB2 SO SUB4 MOD SUB3
AND NA SUB2 SO SUB4 MOD SUB3 FORM SIMPLE EUTECTIC SYSTEMS AND K SUB2 SO
SUB4 MOD SUB3 FORMS A COMPLEX COMPN. (K SUB2 MOD SUB2) MOD SUB3 SO SUB4.
FACILITY: DONETS. GOS. UNIV., DONETSK, USSR.

UNCLASSIFIED

USSR

UDC 632.951+632.78

KOKOT, O. P., and FED'KO, I. A., All-Union Scientific Research
Institute for Corn, Dnepropetrovsk, All-Union Academy of Agricultural Sciences imeni V. I. Lenin

"Use of Organophosphorus Compounds Against Pyrausta Nubilalis"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 5, May 70, pp 27-29

Abstract: Dusting of corn with chloroorganic compounds proved effective in the control of Pyrausta nubilalis Hb. damaging this crop. Because of the toxicity of DDT, heptachlor, and some other chloro derivatives to humans and warm-blooded animals, tests were conducted to determine whether organophosphorus compounds and the carbamate sevin could be used against this insect pest in corn fields. The results of the tests showed that the organophosphorus insecticides Bi 58 and carbophos were ineffective in reducing the number of Pyrausta nubilalis larvae on corn, while sevin, metaphos, and chlorophos were highly effective. The best results were obtained by treating the crops at the time of the mass appearance of larvae and then again 7-10 days later.

1/1

1/2 025 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--EFFECT OF THE TECHNOLOGY OF MANUFACTURING ALLOY, STEELS ON THE LOW
CYCLE FATIGUE IN VARIOUS MEDIA -U-
AUTHOR-(05)-KUSLITSKY, A.B., KRIPYAKEVICH, R.I., TKACHEV, V.I., KOKOTAYLO,
I.V., STAROVYTOV, YU.A.
COUNTRY OF INFO--USSR
SOURCE--FIZ. KHIM. MEKHAN. MAT., 1970, 6, (2), 96-97
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--STEEL PRODUCTION, ALLOY MELTING, VACUUM ARC FURNACE, OPEN
HEARTH FURNACE, ELECTROSLAG MELTING, INDUCTION FURNACE, CHROMIUM NICKEL
STEEL, FATIGUE STRENGTH
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3002/1829 STEP NO--UR/0369/70/006/002/0096/0097
CIRC ACCESSION NO--AP0129197
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0129197

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF THE TECHNOLOGY OF MELTING CR,NI STEELS (OPEN HEARTH, INDUCTION MELTING, VACUUM ARC, AND ELECTROSLAG) ON THE LOW CYCLE FATIGUE OF THE CORRESPONDING GRADES IN VARIOUS WORKING MEDIA (AIR, SALT SOLUTIONS, ETC.) WAS STUDIED. IN GENERAL, VACUUM ARC AND MORE PARTICULARLY ELECTROSLAG REMELTING GREATLY INCREASED THE FATIGUE LIFE OF THESE GRADES UNDER SERVICE CONDITIONS.

UNCLASSIFIED

USSR

UDC 621.314.58 (C88.8)

FROLOV, V.T., KOKOULINA, V.L. [Gor'kovsk. politekhn. in-t im. A.A.Zhdanova--
Gor'kiy Polytechnic Institute imeni A. A. Zhdanova]

"Single-Phase Frequency Divider"

USSR Author's Certificate No 255399, filed 27 Mar 67, published 31 Mar 70 (from
RZh--Elektronika i yeye prizeneniye, No 11, November 1970, Abstract No 11B461P)

Translation: A frequency divider circuit is proposed which assures the feasibility of obtaining a wide band of output frequencies of sinusoidal form current. The transformer of the frequency divider is made with two cores. The primary winding of the transformer across a converter device made with thyristors is connected to a network [set'], the frequency of which is subject to the converter. The secondary winding is connected to a single-phase load. There is also a field winding, connected in series with a source of d-c voltage. All the windings are arranged on the two cores. Control of the thyristors originates from a control unit [blok] connected to the network. The frequency of the voltage on the primary winding of the transformer is two times smaller than the net frequency and the divider achieves a farther division of the frequency of another two times. The output frequency of the divider circuit is four times smaller than the frequency of the power network. In a divider circuit made with one thyristor, the primary windings of the divider are opposingly connected and the secondary--aiding connected. There are two capacitance-loaded windings also opposingly connected. The thyristor is connected to the first winding of the divider. Frequency divisions of 4 and 8 times are possible. 4 ill.V.Sh.

1/1

1/2 015 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--METHOD OF INVESTIGATING ENERGY DISSIPATION IN MATERIALS UNDER
STATIONARY CYCLIC LOADING -U-
AUTHOR--(03)-TROSHCHENKO, V.T., BALLYDERDIN, V.S., KOKOVIN, A.G.
COUNTRY OF INFO--USSR
SOURCE--PROBLEMY PROCHNOSTI, VOL. 2, MAY 1970, P.18-20
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS, METHODS AND
EQUIPMENT
TOPIC TAGS--HYSTERESIS, STRESS, FATIGUE TEST, CYCLIC LOAD TEST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/1434

STEP NO--UR/3663/70/002/000/0018/0020

CIRC ACCESSION NO--AP0135105

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135105

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF A FACILITY DEVELOPED FOR MEASURING THE ENERGY DISSIPATION IN MATERIALS DURING FATIGUE TESTING. A DISTINCTIVE FEATURE OF THE FACILITY IS THAT ENERGY DISSIPATION IS MEASURED BY MEASURING THE DISPLACEMENT ANGLE BETWEEN THE STRESS AND STRAIN IN THE SAMPLE UNDER CONDITIONS OF UNIFORM STRESSED STATE. THIS MAKES IT POSSIBLE TO MEASURE ENERGY DISSIPATION BY THE DYNAMIC HYSTERESIS LOOP METHOD AT VERY LOW STRESS LEVELS. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, INSTITUT PROBLEM PROCHNOSTI, KIEV, UKRAINIAN SSR.

USSR

UDC 59:616.986.7:591.522(470.111)

KARASEVA, Ye. V., KOKOVIN, I. L., and REYCHUK, Ye. A., Institute of Epidemiology and Microbiology, Academy of Medical Sciences USSR

"Natural Foci of Leptospirosis in the Far North (From Data Obtained in the Yamalo-Nenets National Area)"

Moscow, Zoologicheskii Zhurnal, Vol 51, No 3, 1972, pp 467-468

Abstract: The field work was carried out in July and August, 1969, by two groups working simultaneously: one in the region of Seyakha, the other in a boat along a course up along the Seyakha river, through lake Khento up to lake Yambuto. All of the material obtained underwent a bacteriological examination in the field laboratory and a blood serum agglutination reaction and was placed with known strains in the permanent laboratory. A total of 541 specimens of rodents were obtained from the central part of Yamal (Seyakha) region: 426 *Lemmus obensis*, 38 *Dicrostonyx torquatus*, 78 *Microtus gregalis*, and three *Clethrionomys glareolus* from near Salekhard. Fifty-three birds, mainly from the orders Anseriformes and Charadriiformes, and 14 pigeons were also examined. Foci of leptospirosis were absent from the valley of the Seyakhi river (70° N latitude). Antibodies to *L. grippotyphosa* were found in the blood serum from three voles further south, near Salekhard

1/2

KOKOVIN, G.A.

3 PLS 6986
6-73

18-2. THERMODYNAMIC ANALYSIS OF THE GROWTH PROCESSES OF GERMANIUM ALLOYED WITH TIN BY THE METHOD OF COMBINED GAS-LIQUID EPITAXY

Article by T. V. Padorova, N. A. Kozlovskiy, G. A. Kokovin, T. A. Kurnetsov, Novosibirsk; Novosibirsk, 111. Stroimost' po Proizvodstvu [Building up Production], Novosibirsk: Kizmatizdat, 1972, p. 110.

A thermodynamic analysis was made of the Ge-Sn-Cl-H system considering all possible condensed phases. The results of the analysis are applied to the investigation of various schemes for growing epitaxial layers of germanium via a layer of liquid tin by the combined gas-liquid epitaxy method. The conditions of performing the following steps were calculated: application of the layer of liquid tin to the substrate, growth of the germanium layer through the tin-germanium melt layer, and removal of the liquid layer.

KOKOVIN, G.A.

T.P.S. 59203
6-73

(3)

SESSION 11

11-1. COMPARISON OF THE RESULTS OF THERMODYNAMIC ANALYSIS WITH EXPERIMENTAL DATA WITH RESPECT TO SILICON GROWTH BY THE CRYSTALLINE METHOD

Article by G. A. Kokovin, T. V. Padorova, P. A. Karmetsov, Novosibirsk; Novosibirsk, III Sibirskiy po Proektam Novykh Stroyeni Poluprovodnikovikh Kristallov i Filmov, Russian, 12-17 June, 1972, p 111

Frequently the thermodynamic analysis can not be carried out correctly as a result of the absence of external thermodynamic data for the substances participating in the transport process. In these cases it turns out to be useful to use the apparatus of thermodynamic analysis to approximate the available experimental results with respect to growth or etching and calculation of the integral characteristics of the chemical transport process on the basis of it. The expediency and effectiveness of this approach are illustrated in the example of the silicon-chlorine-hydrogen system.

KOKOVIN, G.A.

5225 59008
6-73

11-13. THERMODYNAMIC ANALYSIS OF THE GROWTH PROCESSES OF ZINCITE CRYSTALS

Article by T. V. Fedotova, G. A. Kokovin, T. D. Levinskaya, R. B. Nef'yanova, Novosibirsk; Novosibirsk, III Sibirskiy po Prirodnykh Resursam i Sirotsin Poluprovodnikov Khimicheskoy i Fizicheskoy, Russian, 12-17 June, 1972, p 23

Using a computer, a thermodynamic analysis was made of the $ZnCl_2 \cdot H_2O - O_2 - H_2$ system. The equilibrium partial pressures of the components and the limiting yields of ZnO in the process of hydrodynamic oxidation of zinc chloride were calculated.

1/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--DAILY DIURESIS AND DYNAMICS OF LEPTOSPIRA EXCRETION BY ROOT VOLES
MICROTUS OECONOMUS -U-
AUTHOR-(04)-KARASEVA, YE.V., PASSOVA, O.M., LITVIN, V.YU., KOKOVIN, I.L.
COUNTRY OF INFO--USSR
SOURCE--ZOOLOGICHESKIY ZHURNAL, 1970, NR 3, PP 435-439
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--RODENT, LEPTOSPIRA, URINE, EXCRETION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1384 STEP NO--UR/0439/70/000/003/0435/0439
CIRC ACCESSION NO--AP0136738
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--04DEC70


CIRC ACCESSION NO--AP0136738

ABSTRACT/EXTRACT--!U) GP-0- ABSTRACT. STUDY OF THE DAILY DIURESIS AND EXCRETION OF LEPTOSPIRA IN THE URINE OF MICROTUS OECONOMUS SHOWED THAT THE DAILY URINE VOLUME VARIED FROM 8.1-30.1 ML (AVERAGE 18.3 ML) AND INDIVIDUAL URINE SAMPLES AVERAGED 0.72 ML. URINE WAS PASSED 11-38 TIMES A DAY (25 AVERAGE). THE NUMBER OF LEPTOSPIRA EXCRETED IN THE URINE IN 24 HOURS VARIED FROM 1 TO 10 OUT OF 70-80 MICROSCOPE FIELDS. DURING THE DAY THERE WERE GAPS IN LEPTOSPIRA EXCRETION IN THE URINE, WHILE AT NIGHT DIURESIS WAS INTENSIFIED (URINE WAS PASSED MORE TIMES), AND CONSEQUENTLY THE NUMBER OF LEPTOSPIRA IN THE URINE INCREASED. MICROTUS OECONOMUS WAS THE MAIN CARRIER OF L. GRIPPOTYPHOSA IN NATURAL LEPTOSPIROSIS FOCI. THE VOLE WAS ARTIFICIALLY INFECTED WITH L. GRIPPOTYPHOSA, STRAIN MICROTUS OECONOMUS 475, AND URINE VOLUMES WERE COLLECTED IN THE LABORATORY. IN INITIAL STAGES OF LEPTOSPIROSIS, FEW LEPTOSPIRA WERE EXCRETED, WITH LEVELS INCREASING ON THE FOURTH AND NINTH DAYS IN TWO VOLE STUDIED. FACILITY: INSTITUT EPIEMIOLOGII I MIKROBIOLOGII, AMN SSSR; INSTITUT MEDITSINSKOY PARAZITOLOGII I TROPICHESKOY MEDIYSINY, MINISTERSTVA ZHRAVOOKHRANENIYA, SSSR, MOSCOW.

UNCLASSIFIED

USSR

UDC 518:512.25


KOKOVKIN-SHCHERBAK, N. I., Pyatigorsk Pharmaceutical Institute

"Concerning the Minimization of Computing Algorithms When Solving Arbitrary Systems of Linear Equations"

Kiev, Ukrainskiy Matematicheskiy Zhurnal, Vol 22, No 4, 1970, pp 494-502

Abstract: In the article consideration is given to the problem of the optimization of direct methods of solving an arbitrary system of linear algebraic equations, as well as to the problem of minimization of the number of arithmetic operations with multiple computation of the determinant with a certain number of variable elements by reducing its matrix to the triangular form by direct methods and computation of the rank of the matrix (under certain conditions). In a direct method the initial matrix is transformed into a matrix which determines the solution of the problem, which is effected by linear combinations of lines and columns. In the class of direct methods, with account taken of the method of calculating the arithmetical operations, precise lower limits of the number of multiplications and divisions and, separately, the number of additions and subtractions necessary for solving each of the problems are set. In addition, methods realizing each of the evaluations are presented.

USSR

UDC 669.1:539.216:538.248 ①

ARUTYUNYAN, R. G., YEGIYAN, K. A., YEDIGARYAN, A. A., KOKOYAN, A. B., and
ALAHAKYAN, G. A., Yerevan Scientific Research Institute of Mathematical
Machines

"Effect of Roughness and Thickness on the Coercive Force of Cylindrical
Iron-Nickel Films"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 4, 1973, pp 732-736

Abstract: A study was made of the nature of coercive force H_c in cylindrical iron-nickel films, 0.4-2.2 microns thick, having a magnetoelastic constant close to zero. Two groups of films were investigated: smooth and rough films deposited respectively on polished and specially etched beryllium-bronze wire, 0.25 mm in diameter. In both cases an amorphous Ni-P alloy sublayer was applied to eliminate the effect of the wire's crystal structure. Sublayer roughness was altered by varying the wire-etching current density i_E and bath temperature T . From examination of microphotographs the following features were noted: 1) films deposited on the polished wire with $i_E = 0$ had an extremely smooth surface with an average diameter of heterogeneities of approximately 0.1 microns but with a large spread amounting to 0.01-0.05 microns; 2) increase in i_E led to the formation of a characteristic hilly surface and sharp rise of H_c and the anisotropic dispersion ϕ_{80} with the highest value of $1/2$

USSR

ARUFYUNYAN, R. G., et al, Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No. 4, 1973, pp 732-736

$H_c = 1.8$ erg observed at $i_E = 16$ ma-cm² and D (hill diameter) and h (hill height) equal to 1.5 and 0.25 microns, respectively. After 16 ma-cm², hill size diminishes; 3) a definite relationship exists between H_c , φ_{80} and D, h. 5 figures, 9 bibliographic references.

2/2

- 45 -

1/2 012 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--ZINC CHLORIDE INDIUM CHLORIDE PHASE DIAGRAM --U--
AUTHOR--(03)--KORUYEV, A.N., MALYUGIN, A.S., SHERESKHOVA, V.I.
COUNTRY OF INFO--USSR
SOURCE--Zh. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 663-5
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--PHASE DIAGRAM, ZINC CHLORIDE, PHYSICAL CHEMISTRY PROPERTY,
MELTING POINT, INDIUM CHLORIDE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3004/C959 STEP NO--UR/0080/70/043/003/0683/0685
CIRC ACCESSION NO--AP0131544

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0131544

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE ZNCL SUB2 INCL SYSTEM, THE FORMATION OF 2ZNCL SUB2 INCL AND ZHCL SUB2 2INCL SPECIES OCCURS. THE 1ST OF THEM CONTG. 35.5 WT. PERCENT INCL MELTS INCONGRUENTLY AT 227DEGREES; ZNCL SUB2 2INCL CONTAINS 69 WT. PERCENT INCL AND MELTS CONGRUENTLY AT 211DEGREES. FROM THE PHASE DIAGRAM OF THE TITLE SYSTEM, THE M.P.S. OF PURE ZNCL SUB2 AND INCL WERE 318DEGREES AND 224DEGREES, RESP. FACILITY: SEVERO-KAVKAZ. GORNOMET. INST., ORDZHONIKIDZE, USSR.

UNCLASSIFIED

USSR

UDC 615.779.9

ASHMARIN, I. P., ZHDAN-PUSHKINA, S. M., KOKRYAKOV, V. I., SAMEDOV, A., Sh.,
and ANTONOVA, S. N., Leningrad State University

"Antibacterial and Antiviral Functions of Basic Cellular Proteins and Pros-
pects for Their Practical Use"

Leningrad, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 4, 1972,
pp 502-508

Abstract: After noting the functions of basic proteins in chromatin, ribosomes, lysosomes, etc., the authors review the literature and their own research on the role of these proteins in the mechanism of protection against infection and on their antibiotic activity in vitro and in vivo. Results of studies on the tolerance of animals for the basic proteins following a single or prolonged parenteral administration of various histone fractions are summarized. The use of histones combined with antibacterial and antiviral agents with limited ability to penetrate certain cellular and tissue membranes is regarded as a promising clinical approach. Positive results have been obtained in treating tuberculosis in guinea pigs and mice with isoniazid and histones. The effective doses of isoniazid could be reduced five-fold when combined with certain histone fractions. Histone fractions were also efficacious in the treatment of herpetic keratitis.

1/1

- 19 -

USSR

UDC 539.3 + 534.1

YERZHANOV, ZH. S., and KOKSAIOV, K. K.

"Stability of a Composite Plate on an Undeformable Base Subject to Edge Pressure"

Alma-Ata, Izvestiya Akademii Nauk Kazakhskoy SSR, Seriya Fiziko-Matematicheskaya, No 5, Sep-Oct 72, pp 33-39

Abstract: The article considers the stability of a semi-infinite laminated medium lying on an absolutely rigid base, with allowance for horizontal displacements under the action of edge pressure. The variational principle is used to obtain equilibrium equations and elastic stability boundary conditions. An expression is obtained for critical force.

1/1

USSR

UDC 612.014.3

DISHOVSKIY, Kh. D., KAGAN, Yu. S., KOVTUN, S. D., KOKSHAREVA, N. V.,
TODIONOV, G. O., and SASINOVICH, L. M., Division of Experimental Toxicology,
All-Union Institute of the Hygiene and Toxicology of Pesticides, Polymers,
and Plastics

"The Physiological Mechanism of the Action of Dipyroxime"

Kiev, Fiziologichnyi Zhurnal, Vol 19, No 3, May/Jun 73, pp 310-314

Abstract: Therapeutic administration of dipyroxime to rats poisoned with the insecticides DDVP (0,0-dimethyl-2,2-dichlorovinyl phosphate) and chlorophos resulted in a partial reactivation of cholinesterase in the brain, spinal cord, and striated muscles, as shown by histochemical data. Cytophotometric studies showed that the reactivation of cholinesterase under the effect of dipyroxime in the brain of animals poisoned with DDVO was most pronounced in the caudate nucleus - putamen complex. Electromyographic investigation indicated a beneficial effect of dipyroxime on the transmission of impulses in nerve-muscle synapses. The results of the study of the physiological action of dipyroxime substantiated the conclusion arrived at in earlier work that this drug is effective in the treatment of poisonings with DDVP and chlorophos (cf. Kagan et al, Farmakol. i Toksikol., 3, 359, 1971).

1/1

USSR

UDC 615.285.7.099

KOKSHAREVA, N. V. and KOBTUN, S. D., Institute of Toxicology of Pesticides,
Polymers and Plastics, Kiev

"Estimation of the Toxicity of the Repellent Benzimine Following Skin Application"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 11, 1972,
pp 46-48

Abstract: To study the toxicity of the 40% solution of benzimine used as a repellent, 0.5 milliliters of a 40% alcohol solution was placed daily on a measured area of the skin of 10 white rats for a period of two months. No local irritation was noted, but significant weight loss after 60 applications was noted in comparison with the control group. No changes were noted in hemoglobin concentration or red or white cell count, although the platelet count and the prothrombin time increased significantly. The cumulation threshold index was lowered, indicating that the preparation was able to cross the blood brain barrier. Urinary sugar and protein were increased. Thus, it was found that commercial as well as laboratory preparations of benzimine may affect various systems, and should be considered as potentially dangerous.

1/1

- 72 -

USSR

UDC: 621.317.335:621.317.374

KOKSHAROV, A. M., GIPPE, A. P.

"Errors in Measurement of the Permittivity and Loss Tangent of Electrical Engineering Materials on Superhigh Frequencies"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 99-100 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A349)

Translation: Formulas are derived for determining the random errors in measurement of loss tangent and permittivity by the coaxial resonator method with "standard" and "nonstandard" specimens (standard specimens are distinguished by the fact that their radius and thickness are equal to the radius of the central conductor of the resonator and the height of the gap respectively). A similar calculation is done for measurements by the circular capacitor method. It is shown that the principal source of errors is variability of contact resistance between the cover and the housing of the resonator. N. S.

1/1

814

USSR

UDC 531.7+621.317

VEDERNIKOV, V. M., KIR'YANOV, V. P., KLISTORIN, I. F., and KOKSHAROV, M. A.

"Principles of the Construction of Computing Devices in Laser Displacement Meters"

Novosibirsk, Avtometriya, No 3, 1973, pp 46-52

Abstract: The laser displacement meter is defined as consisting of two units -- a laser interferometer with photoelectric converters, and a computing unit -- and is used to determine dimensions, displacements, velocities, and other physical quantities. The purpose of this paper is to examine the basic principles in the construction of the computer unit in this instrument, analyze its characteristics, and determine the most typical of its areas of applicability. The analysis begins with a discussion of the basic problem in the design of this unit, which is the conversion of the interferometer's output signals into digital form, involving also the representation of the measurement results in an acceptable system of units and the introduction of corrections for the deviations from the normal measurement conditions. The basic structural set-up of the computer unit and the way it realizes its operations are also concerned.

1/1

- 81 -

USSR

UDC 539.14+539.143

KOKSHAROVA, S. F., DZHELEPOV, B. S.

"Table of Energies of Gamma-Rays Arising in the Decay of Radioactive Nuclei"

Tablitsa energiy gamma-luchey, voznikayushchikh pri raspade radioaktivnykh yader (cf. English above), Leningrad, "Nauka", 1970, 288 pp, ill., 14.64 k. (from RZh-Fizika, No 3, Mar 71, Abstract No 3V123K)

Translation: The energies of gamma-rays arising in the decay of radioactive nuclei with half-lives greater than 1 sec are presented. The magnitudes of the energies of gamma-transitions are put in ascending order. The nucleus in the discharge of the excited levels in which the gamma-transition occurs is indicated for each gamma-transition. The table is accompanied by a list of isotopes in the decay of which the given gamma-rays are obtained. A list of references is given, including Russian and foreign periodical publications through October 1969 containing experimental data on the energies of gamma-rays which were taken into account in compiling the tables. 500 references.

1/1

- 109 -

Hydrobiology

USSR

UDC 591.173:599.536

SOKOLOV, V. YE., ~~KOKSHAYSKIY, N. V.~~, and RODIONOV, V. A.

"An Experiment on Transporting Porpoises and a Study of Their Swimming Behavior in an Experimental Tank"

Moscow, Byulleten' Moskovskogo Obshchestva Ispytateley Prirody, otdel Biologicheskii, Vol 76, No 4, Jul/Aug 71, pp 37-46

Abstract: A number of porpoises (*Phocaena phocaena*) were captured in the Black Sea and kept for two weeks in an open-air marine enclosure. Two adult males were flown to Moscow in an inflated rubber boat partly filled with sea water. The trip took 9 hours, with actual flying time of 4-1/2 hours, after which the mammals were kept in fresh water for 3 hours, and then released into a tank filled with fresh water. Because they were partly submerged in water, the porpoises tolerated air travel, accompanied by a drop in barometric pressure at an altitude of 1,800, quite well. They rapidly adjusted themselves to the test tank environment and to the various experimental conditions. Their behavior differed insignificantly from that in the open-air cage in the sea. Experiments were made with visualization of the flow of water around the swimming porpoises and in their wake by means of air bubbles and

1/2

USSR

SOKOLOV, V. YE., et al., Byulleten' Moskovskogo Obshchestva Ispytateley Prirody, otдел Biologicheskoy, Vol, 76, No 4, Jul/Aug 71, pp 37-46

polystyrene granules. More complex studies can apparently be carried out after special training methods have been developed, making it quite possible to obtain complete information on a dolphin's swimming hydrodynamics by direct observation of living specimens.

2/2

Bionics

USSR

UDC 577.3:591.174:595.7:598.2

KOKSHAYSKIY, N. V., Institute of Evolutionary Morphology and Ecology of
Animals im. A. N. Severtsov, Academy of Sciences USSR

"Flight Energetics of Insects and Birds"

Moscow, Zhurnal Obshchey Biologii, Vol 31, No 5, Sep/Oct 70, pp 527-549

Abstract: A discussion is presented of the relationship between body weight and the total energy expended by a bird or insect in flight. The results are compared with corresponding data on aircraft and analyzed from the standpoint of similarity theory, as applied to elementary flight bioenergetics. The concepts of geometric and dynamic similarity are discussed in relation to biological objects and simple functions. Aerodynamic, physiological, and ecological characteristics of birds and insects which are determinable by flight energetics are outlined. A dimensionless criterion is introduced to evaluate the energy efficiency of flight. It is shown that the power necessary for flight (and, consequently, the power available for that purpose) varies with the weight of the animal.

1/1

USSR

KOKT, YU. YA., Candidate of Technical Sciences

"Technical Cybernetics in the Work of the Institute of Electronics and Computer Technology of the Academy of Sciences Latvian SSR"

Riga, Izvestiya Akademii Nauk Latviyskoy SSR, No 3, 1971, pp 57-62

Abstract: The article reviews work done by the Institute of Electronics and Computer Technology, Academy of Sciences Latvian SSR, in the field of technical cybernetics since its inception in 1960. In the area of the theory of finite automata the institute is carrying on research for the purpose of creating a system for the planning of logic devices designed for the processing of digital information. This involves problems in the analysis and synthesis of asynchronous finite automata, as well as the development of a theory of automata without the loss of information of a finite order. In the area of statistical optimization the insti-

1/4

USSR

KOKT, YU. YA., Izvestiya Akademii Nauk Latviyskoy SSR, No 3, 1971, pp 57-62

tute has laid the foundations for a theory of statistical methods of multiparametric optimization, distinguished by high reliability and simplicity of realization with a digital computer. Work in this field is not limited only to theory. A multichannel statistical optimizer OS-10 has been developed for use in the solution of scientific problems, particularly the identification of dynamic objects described by first- and second-order differential equations.

In the area of the automation of complex control processes the Central Committee and Council of Ministers of the Latvian SSR have decided to create an automated republic control system. The so-called "ECOMA" (ECONomics, Mathematics, Automation) program is used for work in this field. The immediate task of this program is the creation of sectorial automated control systems. Leading

2/4

- 46 -

USSR

KOKT, YU. YA., Izvestiya Akademii Nauk Latvyskoy SSR, No 3, 1971, pp 57-62

specialists in the field of mathematics and economics as well as many creative collectives of the republic are participating in the work. The first stage of a subsystem developed at the institute for the Central Pharmaceutical Warehouse of the Main Pharmaceutical Administration of the Ministry of Health Latvian SSR has been operationally tested. The subsystem includes equipment with hardware and software for computer calculation of the turnover of drugs in the pharmaceutical network. In conjunction with VNIKANEFTEGAZ [All-Union Scientific Research, Planning and Design Institute of Full Automation in the Petroleum and Gas Industry] and the State Planning Institute "Proyektavtomatika," an automated control system has been designed for the Ventspils Petroleum Storage Terminal. The institute has developed an automated system for gathering information on the condition of a gas main, the first stage of which has been installed at the Inchukaln underground gas storage tank.

3/4

USSR

KOKT, YU. YA., Izvestiya Akademii Nauk Latviyskoy SSR, No 3, 1971, pp 57-62

The institute staff has done extensive work in the development of elements and components for data processing equipment. This includes the development of a complex of fast direct-coupled logic elements using fast transistors, tunnel diodes, and charge-storage diodes, intended for the design of components and devices for digital automatic equipment with a clock frequency of 100 Mhz or above. Mathematical modeling has been of great assistance to staff members of the institute in the creation of data processing equipment. The institute has developed a standardized design system and is creating a system of standardized functional units to speed up the production of various apparatuses, transducers, functional elements, and units. The institute is studying problems in reliability and diagnostics.

4/4

- 47 -

K
USSR

UDC 621.396.67.215.(02)

PRIGODA, B. A., KOKUNKO, V. S.

Obtekateli antenn letatelnykh apparatov. (Aircraft Radomes), Moscow, Masino-stroyeniye Press, 1970, 288 pp (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8B87 K)

Translation: In this paper, the calculational and design principles of aircraft radomes are presented. The transmission of electromagnetic energies through various dielectric media is investigated, and methods of manufacturing the radomes with the characteristic of the basic high-frequency dielectric materials are presented. Recommendations are made with respect to calculating and designing the radomes. Problems connected with aerodynamic heating of the radomes occurring during supersonic flight in dense layers of the atmosphere are elucidated. Procedures and means of testing and controlling the radomes and compensation for distortions of the electromagnetic energy passing through the radome walls are discussed. There are 18 illustrations, 16 tables and an eight-entry bibliography.

1/1

Acc. Nr. **AP0048804** Abstracting Service:
CHEMICAL ABST.

Ref. Code

4/70 **KUR0078**

90584g Synthesis of fluoro- and ethoxyfluoro derivatives of diethyltin. Kokunov, Yu. V.; Buslaev, Yu. A. (USSR). *Zh. Neorg. Khim.* 1970, 15(1), 280-1 (Russ). Reaction of Et_2SnCl_2 in MeOH with KF gave Et_2SnF_2 (I). Analogous reaction with NaOEt gave $\text{Et}_2\text{Sn}(\text{OEt})_2$ (II). Reaction of I with II in anhyd. EtOH gave $\text{Et}_2\text{SnF}(\text{OEt})$ (III). III has (Sn-F) at 445 cm^{-1} . Chem. shifts of II and III are tabulated. HMJR

REEL/FRAME
19800567

USSR

UDC 681.332.65

KOKURIN, V. A., GLIKLIKH, B. P., IL'INA, G. F., and SHIFMAN, F. N.

"Synchronizer for Multicycle and Ferrite-Transistor Systems with Nonsimultaneous Inhibition"

USSR Author's Certificate No 273517, filed 14 Apr 69, published 18 Sep 70 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6, Jun 71, Abstract No 6B220P)

Translation: Synchronizers made of ferrotransistor elements are known in which the operating principle based on the write level's exceeding the read level is used. These synchronizers are built from special cells with augmented loop data which impose rigid requirements on the parameters of the magnetizing pulses. This complicates the master clocks significantly. Such circuits are necessary for systems with simultaneous inhibition, but their application in systems with nonsimultaneous inhibition is unjustifiable. The purpose of the proposal is to simplify the synchronizer circuit, executing it as a system based on a standard ferrotransistor with nonsimultaneous inhibition and at the same time improving the reliability of the overall device as a whole. The proposed synchronizer has been constructed, just as the known ones, from three standard memory cells with
1/2

USSR

KOKURIN, V. A., et al., USSR Author's Certificate No 273517, filed 14 Apr 69, published 18 Sep 70 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6, Jun 71, Abstract No 6B220P)

positive feedback and an AND-NOT circuit. In contrast to the known devices, the inputs of the AND-NOT circuit, the first and third memory cells, and the write input of the second memory cell are connected to sources of synchronizing cycle pulses, and the AND output of the AND-NOT circuit is connected to the write input of the third memory cell. The output of the first cell is connected to the read input of the second cell, the output of the second cell is connected to the second write input of the third cell, and the output of the third cell is connected to the NOT input of the AND-NOT circuit and the input of the multicycle system. The distinguishing feature of the proposed synchronizer is the principle of construction of the circuit using a read response threshold of the ferrotransistor cells with positive feedback and resistance in the emitter circuit, in which a pulse will occur at the cell output only if the read pulse energy is sufficient to overcome the response threshold and the pulse parameters at the cell output do not depend on the read pulse parameters.

2/2

- 83 -

USSR

UDC 577.15:632.4:582.288

SHMOTINA, G. YE., KOKURINA, N. A., and GORLENKO, M. V.

"DNA Nucleotide Composition of the Agent of Verticillium Wilt"

Leningrad, Mikologiya i Fitopatologiya, Vol 5, No 3, 1971, pp 311-313

Abstract: One of the key problems in this field is the species composition of wilt fungus. Some believe in a variety of species, and some believe that all agents belong to the species first described in 1879. The described research was aimed at clarifying this point by analyzing wilt agents on the basis of their DNA nucleotide composition. The evidence agreed with that in the literature. According to the taxonomic index, no difference was perceived between *V. albo-atrum* and *V. dahliae*, leading the authors to ascribe both to the *V. albo-atrum* category.

1/1

- 22 -

USSR

UDC 547.963.3

VANYUSHIN, B. F., GALIYEV, M. S., KVARATSKHELIYA, M. T., and KOKURINA, N. A.,
Chair of Plant Biochemistry, Moscow State University imeni M. V. Lomonosov,
and Laboratory of Bacterial Fertilizers, All Union Scientific Research Institute
of Agricultural Microbiology

"The DNA Composition of Bacillus Megatherium Variants Obtained Through the
Action of Certain Phages"

Moscow, Biologicheskiye Nauki, No 5 (89), 1971, pp 82-85

Abstract: A study of the mutability of microorganisms was performed on the
basic strains P-57 and 28 of Bacillus megatherium. Mutants were obtained
through exposure of these strains to phages and to ultraviolet light. DNA
composition was determined by chromatography. While the DNA of the basic Bac.
megatherium cultures belong to the AT type and had 41% of GC pairs, mutants
769 and 771 obtained from the P-57 strain by the action of phage PK form
wrinkled colonies, and their DNA contains 41.9% and 43.1% GC pairs respectively.
Through the action of phage 201, dissociation of Bac. megatherium strain 28
can proceed without changes in DNA composition, giving rise to mutant 2675.
Similarly, DNA composition in the ultraviolet mutant 122 is identical with
that in the basic strain P-57. No methylated bases (5-methylcytosine or N⁶-
methyladenine) were found in the DNA of any of the above-mentioned cultures.
1/1

1/2 012

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--POSSIBLE PREDICTION OF THE AMINO ACID CONTENT IN BACTERIAL PROTEIN
USING THE NUCLEOTIDE COMPOSITION OF DNA -U-

AUTHOR--(05)--SAMOILOV, P.M., KOKURINA, N.A., UAROVA, V.N., VOROBYEVA, L.I.,
GRISHCHENKO, V.M.

COUNTRY OF INFO--USSR

SOURCE--PRIKL. BIOKHM. MIKROBIOL. 1970, 6(1), 44-7

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BACTERIA, MYCOBACTERIUM, CHEMICAL COMPOSITION, AMINO ACID,
NUCLEOTIDE, DNA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0571

STEP NO--UR/0411/70/006/001/0044/0047

CIRC ACCESSION NO--AP0117801

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117801

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE BETWEEN COMPN. OF DNA AND AMINO ACID CONTENT IN BACTERIAL PROTEIN WAS USED FOR PROVING THE POSSIBILITY OF USING PUBLISHED DATA ON DNA COMPN. FOR PREDICTING AMINO ACIDS CONTENT OF THE BACTERIAL PROTEIN. THE NUCLEOTIDE COMPN. OF DNA AND AMINO ACIDS IN PROTEIN OF LACTOBACTERIUM PLANTARUM AND MYCOBACTERIUM LUTEUM WERE STUDIED. SUBSTANTIAL DIFFERENCES IN THE COMPN. OF PROTEINS IN THESE BACTERIA WERE FOUND, ESP. IN THE CASE OF ASPARTIC ACID, PROLINE, ALANINE, VALINE, METHIONINE, TYROSINE, HISTIDINE, AND ARGININE. THE ANALYSES SHOWED THAT THE RELATION BETWEEN THE NUCLEOTIDE COMPN. OF DNA AND AMINO ACIDS CONTENT OF TOTAL BACTERIAL PROTEIN WAS TRUE AND RESPECT TO 9 AMINO ACIDS OUT OF 16 STUDIED (ASPARTIC ACID, SERINE, GLUTAMIC ACID, PROLINE, GLYCINE, METHIONINE, ISOLEUCINE, TYROSINE, AND ARGININE). IN THE CASE OF ASPARTIC ACID, PROLINE, AND METHIONINE THE EXPTL. FOUND DEVIATIONS IN THE CONTENT OF AMINO ACIDS IN PROTEINS OF L. PLANTARUM IN COMPARISON WITH PROTEINS OF M. LUTEUM WERE HIGHER THAN THEORETICAL DEVIATIONS. THE NUCLEOTIDE COMPN. OF DNA IN L. PLANTARUM AND M. LUTEUM PROVE THAT DNA OF L. PLANTARUM AND M. LUTEUM IS OF AT AND GC TYPE, RESP. THE CONTENT OF METHIONINE IN THE PROTEIN OF L. PLANTARUM WAS 2.7PERCENT AND THIS WAS HIGHER THAN FOR THE PROTEIN OF M. LUTEUM.

FACILITY: INST. BIOCHEM, PHYSIOL MICROORG., MOSCOW, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--A SUGGESTED TYPE OF A SPARK QUENCH CIRCUIT -U-
AUTHOR--LYSENKO, YE.V., KOKURKINA, T.I. K
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, ELEKTRICHESKIYE STANTSI, NO 4, 1970, PP 80-81
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--SPARK DISCHARGE, RC CIRCUIT, DIODE CIRCUIT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1987/1672 STEP NO--UR/0104/70/000/004/0030/0081
CIRC ACCESSION NO--AP0104894
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0104894

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MATERIALS ARE PRESENTED CONCERNING A METHOD OF INCREASING PERMISSIBLE BREAKING CAPACITY OF THE CONTROL CONTACT BY USING A SPARK QUENCH RC CIRCUIT WITH A DIODE, WHICH MAKES POSSIBLE BREAKING A HIGH INDUCTIVE LOAD PRACTICALLY WITHOUT THE OCCURRENCE OF AN ARC AT CONTACTS. THE USE OF THE SUGGESTED SPARK QUENCH CIRCUIT CAN INCREASE THE CAPACITY OF CONTACTS 2-3 TIMES WITH RESPECT TO THE DATA OF MANUFACTURING PLANTS. ONE ILLUSTRATION.

UNCLASSIFIED

AA0046283

Kokuroshnikov, N.M.
UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, 2-70

243768

COMBUSTION REGULATING DEVICE for steam boiler furnaces, particularly micro-furnace installations, with jets to burn liquid fuel, comprises a steam pressure transducer controlling the fuel, air and steam supply, differing in the fuel and steam supply units being in the form of separate slide-valves, and the air supply unit having a piston manometer to regulate the air supply. This improves reliability and simplifies manufacture. The device consists of body 1, piston manometers 2 and 3, slide-valves for fuel 4 and for steam 5, yoke 6. As steam pressure in the boiler increases, the steam, coming out of the boiler, presses on the pistons of manometers 2 and 3 so that the piston of manometer 2 rises and that of manometer 3 falls. Rod 8, connected to yoke 6, rises too, and rod 9 descends at the same time. Slide-valves

1/3

18

19781429

AA0046283

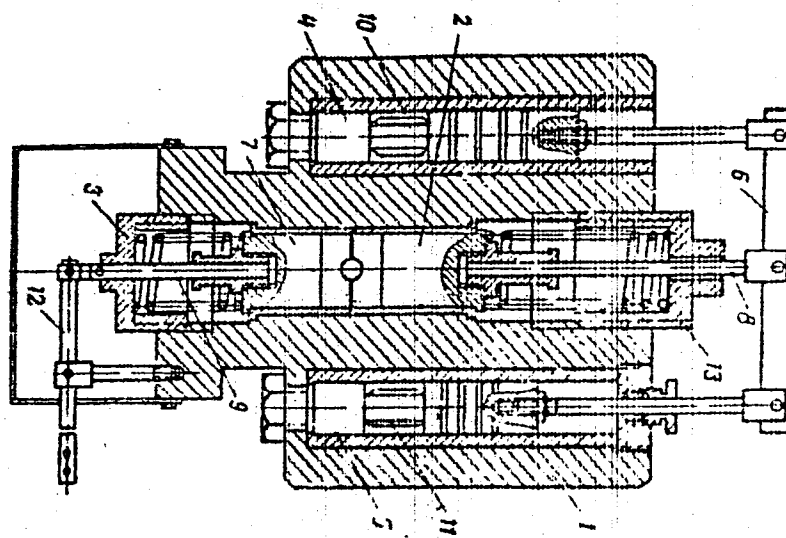
4 and 5 rise and cover channels 10 and 11 through which fuel and steam for atomising go to the jet. Rod 9 turns lever 12 operating the air damper. As the pistons of manometers 2 (with spring device 13) and 3 descend, the combustion of the jet torch is reduced, approximating to the normal pressure of steam in the boiler. As the pressure drops, the spring in device 13 lowers the piston of manometer 2, and the spring in manometer 3 raises piston 7. The supply of fuel steam and air increase, and the steam pressure gradually reaches the required setting.

24.3.67 as 1143884/24-6 KOKUROSHNIKOV N.M. (1.10.69) Bul. 17/14.5.69. Class 24m, Int, Cl, F 23n

2/3

.19781430

AA0046283



3/3

19781431

USSR

UDC 547.436

KOSTYUKOVSKIY, Ya. L., BRUK, Yu. A., PAVLOVA, L. V., SLAVACHEVSKAYA, N. M.,
KOKUSHKINA, A. V., MIRKIN, B. S., BELEN'KAYA, I. A.

"Alkanethiols and Their Derivatives. I. Acid-Base Properties of N-Substituted β -Aminoalkanethiols"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 662-665

Abstract: The acid-base properties of a number of N-substituted β -aminoalkanethiols and some related compounds are studied under standard conditions to evaluate the effect of structural singularities of thiol on the acidity of the SH-group, and hence on sulfhydryl reactivity. The results of the studies show that increased acidity of the SH group is determined chiefly by the capacity of the given compounds to form a zwitter-ion structure, and to a lesser degree by the nature of the alkyl substituents associated with the nitrogen atom. The effect of alkyl substituents on the basicity of the amino group is not so clearly expressed as a consequence of other factors connected with the inductive effect.

1/1

USSR

UDC 669.295.539.292

KOLACHAEV B. A., LYASOTSKAYA, V. S., and SOVALOVA, Ye. G., Moscow

"The Connection Between the Strength Properties and Phase Composition of Hardened Titanium Alloys"

Moscow, Izvestiya Akademii Nauk USSR, Metally, No 5, Sep-Oct 72, pp 147-159

Abstract: A study was made of the relationship between metastable diagrams of the phase composition of hardened titanium alloys and equilibrium diagrams of state. The example of titanium alloys with β -isomorphic elements (Ti-V, Ti-Fe, Ti-Ni, Ti-Cr, Ti-Nb, and Ti-W) is used to demonstrate that the metastable diagram can be predicted on the basis of the diagram of state, providing the structures of titanium alloys after hardening from the β -domain are known. From the metastable diagram of the phase composition the quality dependence of mechanical properties of titanium alloys on their heating temperature in hardening can be established. The hardness dependence of Ti-V alloys on their heating temperature and phase composition, demonstrates the correlation between experimental data and theoretical curves. Four figures, eight bibliographic references.

1/1

USSR

UDC 669.295.5'28.017.3

KOLACHEV, B. A., MAONOVA, F. S., and LYASOTSKAYA, V. S., Moscow

"Martensite Decomposition in Ti-Mo Alloys During Tempering"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 1, Jan/Feb 74, pp 200-203

Abstract: The mechanism and kinetics of martensite decomposition were investigated for Ti-Mo alloys containing 2.1, 4.4, 5.9, and 8.3% Mo. Choice of alloys was made such that after quenching from the beta region (950° C) they would have phase compositions of: α' , α'' , and low-alloyed α'' and $\alpha'' + \beta$. It was found that decomposition of α' -martensite during tempering (450° C) yields a depleted α' -phase + the beta-phase which in turn yields the α -beta phase. Decomposition of α'' -martensite follows two paths: 1) the low-molybdenum concentration path of α'' to depleted α'' + beta to the α -beta phase; and 2) the high-molybdenum concentration path of: $\alpha'' \rightarrow \beta \rightarrow \beta + \omega \rightarrow \beta + \alpha'' \rightarrow \beta + \alpha'' + \alpha' \rightarrow \beta + \alpha$. Decomposition of α' -martensite is accomplished by little alloy strengthening while α'' -martensite decomposition starts with significant alloy strengthening and then weakening (softening) where the softening effect is determined by the alloy content and the martensite decomposition process. The most softening was observed for $\alpha'' + \beta$ Ti-Mo alloys. Three figures, five bibliographic references.

1/1

- 44 -

USSR
Aluminum and Its Alloys

USSR

UDC 669.715'3'721

BRODSKAYA, R. M., and KOLACHEV, B. A., Moscow Aviation Technological Institute, Chair of the Science of Metals and of the Heat Treatment of Metals

"Morphology of Al_9FeNi Phase in Ternary Alloy of Al - Fe - Ni System and in AK4-1 Alloy"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 6, 1973, pp 111-113

Abstract: The alloying Fe and Ni elements, when introduced into AK4-1 alloy, each from 0.8 and 1.3%, are distributed between the solid solution on Al base and the Al_9FeNi phase. Ni does not change the recrystallization temperature of Al alloys; apparently its role is to bond Fe into the Al_9FeNi phase and to prevent the development of the brittle compound Al_7CuFe . Form and dimensions of separations of the Al_9FeNi phase have been studied on the ternary model-alloy containing Al and 1% Fe and 1% Ni and on the AK4-1 alloy with the same Fe and Ni contents. Eutectic separations of lamellar type observed in the structure of cast Al alloys and the different character of phase separations
1/2

USSR

BRODSKAYA, R. M., and KOLACHEV, B. A., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 6, 1973, pp 111-113

in the AK4-1 alloy are discussed by reference to photographs. A supposition is given for the mechanism of the observed development of small-dispersed particles. Two figures, six bibliographic references.

2/2

- 1 -

Titanium

USSR

UDC 669.295:539.295

LYASOTSKAYA, V. S., KOLACHEV, B. A., SOVALOVA, YE. G., Moscow Aviation Engineering Institute, Departments of Physical Metallurgy and Hot Treatment of Metals

"Dilatometric Investigation of Transformations in Alloys of Ti-V and Ti-Al-V Systems"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya, No 4, 1973, pp 127-131

Abstract: Binary alloys, containing 4, 10, 16, and 25% V, having different structures (α' , α'' , $\beta+\omega$, and β) after quenching from the β region, and ternary alloys with the same vanadium content but with 3 and 6% aluminum, were studied. In alloys of the Ti-V system, the decomposition of α' -martensite does not cause notable volume effects, but the decomposition of α'' -martensite is accompanied by a compression effect at temperatures above 400°C. Alloying Ti-V alloys with 3% Al leads to increased volume effects accompanying the decomposition of α' - and α'' -martensite during heating, but alloying with 6% Al reveals an almost complete disappearance of these volume effects. Results produced in this study confirmed the scheme of unstable

1/2

USSR

LYASOTSKAYA, V. S., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya, No 4, 1973, pp 127-131

beta-solid solution in Ti-V alloys as proposed by S. G. FEDOTOV and his associates, and indicate the essentially different processes occurring in Ti-V alloys above and below 280°C. Aluminum diminishes volume effects caused by the formation and transformation of the omega-phase. A significant effect of compression at temperatures above 500°C can be detected in the presence of aluminum which has been linked with redistribution of aluminum between the alpha- and beta-phases. 3 figures, 9 bibliographic references.

2/2

- 17 -

USSR

UDC: 669.017:539.37

KOLACHEV, B. A., GORSHKOV, YU. V., MAL'KOV, A. V., SEDOV, V. I., and DROZDOV, P. D.,
Moscow

"The Effect of Hydrogen on the Breakdown Strength of the OT4 and OT4-1 Grades of Alloys"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 73, pp 102-107

Abstract: The authors study the effect of hydrogen on the critical coefficient of the intensity of stresses on the OT4 and OT4-1 titanium alloys during the testing of specimens with fatigue cracks for static console bending. This type of testing shows the susceptibility of sheet titanium materials to brittle fracture. The results show that the breakdown strength for the OT4 and OT4-1 alloys is somewhat increased at a hydrogen concentration in the order of 0.008-0.012 percent and then falls. The magnitude of the coefficient of stress intensity is not a constant of the material, but depends on a series of factors including hydrogen content in the alloy and the work time under load. The micro-breakdown mechanism changes as hydrogen content rises. Micro-cracks appear in the specimen during the formation and interaction of twins in the plastic deformation process up to a hydrogen content in the order of 0.01 percent for OT4-1 and 0.012 percent for OT4. Further increase in hydrogen concentration results in the realization of a new mechanism: splitting of the beta phases

1/2

USSR

KOLACHEV, V. A., et al, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 73, pp 102-107

and the formation of micro-cracks on the alpha-beta phase boundary division. The mechanism takes effect at hydrogen concentrations greater than 0.015 percent. The micro-breakdown mechanism affects the basic stages of micro-crack growth which ultimately is reflected in the ductility of the material.

2/2

- 60 -

USSR

UDC 669.295.539.292

KOLACHEV, B. A., MAMONOVA, F. S., LYASOTSKAYA, V. S., and VEDNEVA, L. S.,
Moscow Aviation Technological Institute. Chair of the Science of Metals and
Hot Working of Metals

"Investigating the Structure and Properties of Annealed Alloys of Ti-Mo System"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya,
No 3, 1973, pp 120-124

Abstract: A study was made of the rules of changing properties and phase composition of titanium-molybdenum alloys, depending on molybdenum content. The investigated alloys were produced from TG-100 sponge with additions of 0.05% Fe, 0.02% Si, 0.04% O₂, and 0.03% C. The alloys were annealed by heating to 950°, with subsequent soaking for one hour and cooling to 800° and 750° in air and 700° and 650° in water. The influence of Mo-content on the differently annealed alloys and their mechanical properties is demonstrated. Titanium alloys and their mechanical properties is demonstrated. Titanium alloys with 6.8, 8.6, 11.4, and 13% Mo annealed at 800, 750, 700, and 650° C, respectively, with air cooling have the highest strength. The two-phase Ti+11.4% Mo alloy with very fine ($\alpha + \beta$)-structure without ω -phase possesses maximum strength

1/2

USSR

KOLACHEV, B. A., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 3, 1973, pp 120-124

characteristics when water cooled after annealing at 700-650° C. In Ti-Mo alloys, the ω -phase does not develop with air-cooling after annealing at temperatures < 650° C and with water-cooling after annealing at temperatures < 700° C. five figures, three bibliographic references.

2/2

- 52 -

Titanium

UDC 659.295.539.295

USSR

KOLACHEV, B. A., LOKSHIN, F. L., LYASOTSKAYA, V. S.,
SOVALOVA, Ye. G., and KOROBV, O. S., Stupinsk Branch of Moscow
Aviation Technological Institute, Chair of the Science of Metals
and of Hot Working of Metals

"The Influence of Aluminum on the Structure and the Properties
of Ti+10%V Alloy"

Ordzhonikidze, Tsvetnaya Metallurgiya, No 2, 1973, pp 149-152

Abstract: The influence of Al additions on the structure and properties of
Ti+10% V alloy, possessing the α " martensite structure after hardening from
the β -region, was experimentally investigated. The demonstrated change of
the distance between (020) and (110) lines of the α "-phase indicates that the
rhombic distortion of the lattice decreases with increasing temperature of
hardening. At the same time, the rhombic lattice distortion of martensite in
the alloy containing 6% Al is higher than in the alloy with 3% Al. The compar-
ison of Ti+10%V+3%Al and Ti+10%V+6%Al curves shows that the increase of Al con-
tent in the alloy widens the interval of the heating temperature of hardening,
after hardening from which the α "-phase is stabilized. In hardening the
Ti+10%V alloy, with increasing hardening temperature the phases $\alpha + \beta$, $\alpha + \beta$
+ ω , $\alpha + \beta + \omega + \alpha$ ", $\alpha + \alpha$ " and α " develop in succession; in Ti +10%V+3%Al and

1/2

USSR

KOLACHEV, B. A., et al., Tsvetnaya Metallurgiya, No 2, 1973, pp 149-152

Ti-10%V-6%Al the phases $\alpha + \beta$, $\alpha + \beta + \alpha''$, $\alpha + \alpha''$, and α'' develop. Al prevents ω -phase formation in hardening and lessens the quantity of ω -phase developing in the aging of hardened alloys. Three figures, one table, eight bibliographic references.

2/2

Welding

UDC 621.791.052.01:669.295

USSR

KOLACHEV, B. A., Doctor of Technical Sciences, MAMONOVA, F. S., Engineer,
ARTSYBASOV, YU. N., Engineer, SHCHERNIKOVA, A. YE., Engineer, and GORSHKOV,
YU. V., Engineer

"Effect of Expansion and Vacuum Annealing on Residual Stresses in Welded
OT4-1 Alloy Joints"

Moscow, Svarochnoye Proizvodstvo, No 2(460), Feb 73, pp 35-36

Abstract: The effect of expansion and vacuum annealing on residual stresses of the first and second types across the weld seam and over the thickness of the weld seam were investigated on specimens of 2-mm-thick OT4-1 alloy sheet material. The stress distributions are analyzed by reference to diagrams. Tensile stresses of the first type act in the metal of the seam immediately after welding; they are maximum on the initial metal -- seam boundary and they change to compression stresses 6 mm from the seam center. Expansion decreases of the first type, and vacuum annealing eliminates them completely. Residual stresses of the second type on the order of 10 kg/mm² act immediately after welding in the weld joint; the microstresses of the weld joint are only slightly affected by expansion, but they decrease significantly with vacuum annealing. The decrease of residual stresses as a result of expansion and vacuum annealing decreases the tendency of welded joints to develop cracks. Four figures, three bibliographic references.

1/1

USSR

UDC 669.295

KOLACHEV, B. A., MAKONOVA, F. S., and LYASOTSKAYA, V. S., Moscow Aviation Technological Institute

"Composition of Martensite in Hardened Ti-Mo Alloys"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 115-116

Abstract: X-Ray diffraction analysis of Ti-Mo rods hardened at 950°C for 30 min. showed that the rhombic lattice distortion of the α "-phase increases with increasing concentration of molybdenum (above 4%), and it reaches maximum value when the molybdenum concentration reaches 6% and remains unchanged thereafter. The crystal lattice parameters a and $b \sqrt{3}$ are not equal, starting with 4% of Mo in alloy because of the appearance of the α "-phase with rhombic lattice. Difference between these two parameters increases with increasing concentration of Mo up to 6% and remains unchanged thereafter. Broadening of lines (11.4) and (10.3) indicated changes in the fine crystal structure due to the appearance of microstresses of the second order, which increase with increasing concentration of molybdenum from 0 to 6%. The obtained experimental results verify an earlier assumption that martensite phases in titanium alloys can be saturated with β stabilizers up to a certain threshold concentration. In the system Ti-Mo the martensite α " cannot contain more than 6% Mo. At higher concentrations of Mo in the alloy the

1/2

USSR

KOLACHEV, B. A., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 115-116

splitting of lines of the α' "phase remains constant, and the lattice parameters remain unchanged. Two theories are presented regarding the existence and transformation of the β -phase which need additional experimental verification.

2/2

USSR

Titanium

UDC 669.295

KOLACHEV, B. A., NOSOV, V. K., LIVANOV, V. A., SHCHIPUNOV, G. I.,
CHUCHORYUKIN, A. D.

"Influence of Hydrogen on Technological Ductility of Ti Alloy with 9% Al"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Svedeniy, Tsvetnaya
Metallurgiya, No 4, 1972, pp 137-142.

Abstract: This work presents a confirmation of data on the favorable influence of hydrogen on the technological ductility of alloys with high aluminum content at hot pressure working temperatures. The favorable influence of hydrogen is manifested not only as a decrease in the temperature of the anomalous increase in plasticity related to the $\alpha + \beta \rightarrow \beta$ conversion (about 1,100° for the alloy Ti + 9% Al), but also as an expansion in the temperature interval of increase ductility for upsetting from 1,000° to 1,050°. The positive influence of hydrogen is also manifested as a significant reduction in the force of deformation throughout the entire interval of temperatures and hydrogen concentrations studied. Hydrogen has its most favorable influence in the 0.50-0.2% (by mass) concentration interval.

1/1

USSR

UDC 669.295.5:788:539.219

KOLACHEV, B. A., NAZIMOV, O. P., and GABIDULLIN, R. M., Moscow
Institute of Aviation Technology, Department of Metal Science
and Hot Metal Working

"Thermal Diffusion of Hydrogen in Titanium and VT15 Alloy"

IVUZ, Tsvetnaya Metallurgiya, No 2, 1971, pp 99-103

Abstract: Experiments are described which confirm the phenomenon of thermal diffusion of hydrogen in titanium alloys. The thermal diffusion of hydrogen was studied in technical titanium containing 0.045% Si, 0.011% O₂, 0.06% N₂, and 0.012% C, and in β

titanium VT15 alloy containing 3.7% Al, 10.6% Cr, 7.35% Mo, 0.03% C, 0.11% Fe, 0.04% Si, and 0.011% O₂. The studies were performed

on forged material produced from an ingot made in an arc furnace with a consumable electrode. The data indicated that thermal diffusion of hydrogen actually can result in concentrations in the cold areas of the specimen sufficient to cause hydrogen brittleness. As the temperatures at which thermal diffusion is

1/2

USSR

KOLACHEV, B. A., et al., Tsvetnaya Metallurgiya, No 2, 1971,
pp 99-103

studied are increased, hydrogen brittleness does not develop,
but if parts of these alloys are cooled to low temperatures
after operating at high temperatures, brittleness becomes possible
once again.

2/2

USSR

UDC: 621.785.34.061:669.295

KOLACHEV, B. A., GORSHKOV, Yu. V., SHEVCHENKO, V. V., ARTSYBASOV, Yu. N.

"Structure and Properties of OT4 and OT4-1 Alloys Following Vacuum Annealing"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 5, 1972, pp 6-10.

Abstract: Removal of hydrogen from a metal by vacuum annealing is the most radical means of preventing hydrogen embrittlement. However, the surface of vacuum-treated metal is quite active and interacts with water vapor even at room temperature. The present article studied the influence of temperature and duration of vacuum annealing on the structure and properties of OT4 and OT4-1 alloys. The chemical composition of the alloys corresponded to the technical conditions. The studies were performed using bars 15 mm in diameter and sheets 1-3 mm thick. It was found that vacuum annealing does decrease hydrogen embrittlement of OT4-1 alloy. Vacuum annealing improves the mechanical characteristics of OT4 alloy tested with stress concentrators, but worsens the mechanical characteristics of OT4-1 alloy under these same conditions. It is recommended that vacuum annealing be performed at 670°C for two hours with subsequent oxidation of the surface of the sheets by allowing air into the system at 300-400°C.

1/1

Transformation and Structure

USSR

UDC 620.186:669.71'3

ZYABREVA, L. N., NIKIFOROV, G. D. and KOLACHEV, B. A., Moscow Aviation Technological Institute

"Structural Changes and Phase Transformations in Welded Joints of Aluminum Alloy With 4% Copper"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 2, 1972, pp 75-76

Abstract: Described is a study on structural changes and phase transformations occurring in Al-4% Cu alloy under the thermal cycle of welding. During welding each volume of metal is heated up to certain limit temperatures reflected in five characteristic structural sections which had been heated to different temperatures ranging from 150°C (zone decay stage) to 640°C (liquidus stage). The detailed changes in each section indicate the possibility of changing the width of the structural sections by varying the thermal welding cycle. A 30% addition of sintered aluminum powder promotes diffusion processes in the metal and precludes grain disintegration which will, in turn, eliminate the major cause of deterioration of the mechanical properties in the heat-affected zone. (1 illustration).

1/1

Heat Treatment

USSR

UDC: 669.295:539.292

LYASOTSKAYA, V. S., ~~YERACHEN, B. A.~~ and SOVALOVA, YE. G., Department of Physical Metallurgy and Hot Working of Metals, Moscow Aviation Technological Institute

"Effect of Heat Treatment on the Structure and Properties of Alloys of the Ti-V System"

Ordzhonikidze, Izvestiya vysshikh uchebnykh zavedeniy, Tsvetnaya metallurgiya, No 5, 1971, pp 128-132

Abstract: According to earlier research, vanadium may be effectively used to strengthen titanium alloys both as annealed and hardened. The objective of this study was the effect of age hardening of alloys as a function of structure and the effect of the temperature of heating for austenizing in the beta-region on the hardening of the aged alloys. The test specimens were alloys containing 4, 6, 8, 10, 12, 14, 16, and 20% V. The alloys were water quenched from 650 and 1000°C and then aged for 3 hrs at 200, 400, and 500°C. The specimens were faced to remove the gas saturated layer. In alloys with martensite structure (after quenching), maximum age hardening

1/2

USSR

LYASOTSKAYA, V. S., et al, Izvestiya vysshikh uchebnykh zuvedeniy, Tsvetnaya metallurgiya, No 5, 1971, pp 128-132

was observed during a phase decomposition. In alloys with the $(\beta+\omega)$ phase, the strengthening effect appears to be slight. An increase in the temperature of heating for austenizing in the β -region increases the hardness of alloys with a martensite phase structure and leaves the hardness of β -alloys unaffected. The temperature of heating for austenizing in the β -region does not affect the aging of martensitic alloys. Increasing the austenizing heating temperature in the β -region promotes the aging effect of β -alloys induced by the formation of the ω -phase but does not affect the aging induced by the α -phase. (3 illustrations, 2 tables, 5 bibliographic references).

2/2

- 19 -

USSR

UDC 669.295.5:788:539.219

KOLACHEV, B. A., NAZIMOV, O. P., and GABIDULLIN, R. M., Moscow
Institute of Aviation Technology, Department of Metal Science
and Hot Metal Working

"Thermal Diffusion of Hydrogen in Titanium and VT15 Alloy"

IVUZ, Tsvetnaya Metallurgiya, No 2, 1971, pp 99-103

Abstract: Experiments are described which confirm the phenomenon of thermal diffusion of hydrogen in titanium alloys. The thermal diffusion of hydrogen was studied in technical titanium containing 0.045% Si, 0.011% O₂, 0.06% N₂, and 0.012% C, and in β

titanium VT15 alloy containing 3.7% Al, 10.6% Cr, 7.35% Mo, 0.03% C, 0.11% Fe, 0.04% Si, and 0.011% O₂. The studies were performed

on forged material produced from an ingot made in an arc furnace with a consumable electrode. The data indicated that thermal diffusion of hydrogen actually can result in concentrations in the cold areas of the specimen sufficient to cause hydrogen brittleness. As the temperatures at which thermal diffusion is
1/2

USSR

KOLACHEV, B. A., et al., Tsvetnaya Metallurgiya, No 2, 1971,
pp 99-103

studied are increased, hydrogen brittleness does not develop,
but if parts of these alloys are cooled to low temperatures
after operating at high temperatures, brittleness becomes possible
once again.

2/2

USSR

UDC 669.296:620.186:539.56:669.788

LIVANOV, V. A., KOLACHEV, B. A., and BUKHANOVA, A. A.

"Influence of Hydrogen on the Structure and Properties of Zirconium"

Tr. Mosk. aviats. tekhnol. in-ta (Works of the Moscow Aviation Technological Institute), 1970, vyp. 71, pp 23-26 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 I791 by the authors)

Translation: The predominant form of hydrogen embrittlement in zirconium and its alloys is hydride embrittlement, which develops at high rates of deformation, particularly in impact tests under low-temperature conditions. Hydride embrittlement in zirconium is manifested in the event of hydrogen content > 0.005%. In hardened zirconium specimens, hydride embrittlement of the second kind, which develops at low rates of deformation, is found. Four illustrations. Bibliography of five titles.

1/1

USSR

UDC 669.295.5.018.29:[620.186 + 539.56]:669.78

KOLACHEV, B. A., GORSHKOV, Yu. V., BUKHANOVA, A. A., SEDOV, V. I., and SHEVCHENKO, V. V.

"Influence of Hydrogen on the Structure and Properties of Titanium Alloy OT4-1"

Tr. Mosk. aviats. tekhnol. in-ta (Works of the Moscow Aviation Technological Institute), 1970, vyp. 71, pp 16-23 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 1779 by the authors)

Translation: Impact tests and tests according to the Troyano method (test basis: 500 days) showed that a hydrogen concentration $\leq 0.005\%$ is safe for alloy OT4-1. Threshold stresses decline with an increase in hydrogen content and at concentrations of 0.02-0.1% amount to 30 kg/mm² given a test basis of 500 days. The tendency of the alloy toward hydrogen embrittlement intensifies with a drop in test temperature. Alloy OT4-1 with an acicular structure is more prone to hydrogen embrittlement than that with a granular phase form. Eight illustrations. Bibliography of five titles.

1/1

USSR

UDC 669.71.018.9.4

SHVETSOV, I. V., SHVETSOVA, G. B., YELAGIN, V. I., and KOLACHEV, B. A.

"Influence of Hydrogen on the Structure and Mechanical Properties of Ingots Made of AK8 Alloys"

Tr. Mosk. aviats. tekhnol. in-ta (Works of Moscow Aviation Technological Institute), 1970, vyp. 71, pp 58-66 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 G238 by authors)

Translation: The authors studied the formation of primary and secondary porosity in semicontinuously cast ingots of AK8 brand alloy. The amount of primary porosity increases linearly with an increase in hydrogen content. The tendency of the alloy to form solid solutions, supersaturated relative to hydrogen, intensifies with a lessening of oxide-scale content. A supersaturated hydrogen solution in the solid alloy decomposes with the formation of secondary pores 10-15 microns in diameter. Hydrogen embrittlement develops in AK8 brand alloy with elevated hydrogen content at low rates of deformation. Six illustrations.

1/1

USSR

UDC 669.71.41

LIVANOV, V. A., GOROKHOV, V. P., KOLACHEV, B. A., KOFMAN, L. M., and SKUCHILOV, A. I.

"Filtration of Aluminum Melts Through Aluminum Oxide With Simultaneous Degasification by Neutral Gases"

Tr. Mosk. aviats. tekhnol. in-ta (Works of Moscow Aviation Technological Institute), 1970, vyp. 71, pp 88-93 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 G230 by authors)

Translation: The article presents a theoretical estimate of the quantity of neutral gas which must be passed through a melt in order to decrease the gas content a given number of times. The theoretical calculations agree well with the experimental data obtained during the degasification of aluminum with neutral gases and nitrogen. The gas content of aluminum is decreased especially effectively when aluminum is filtered through Al_2O_3 with simultaneous degasification by neutral gases. Two illustrations. One table. Bibliography of four titles.

1/1

- 6 -

USSR

K UDC: 539.55:669.295.5'788

KOLACHEV, B. A., BUKHANOVA, A. A., and SHEVCHENKO, V. V.

"Influence of Grain Size and Type of Hydride Separation on Mechanical Properties of Titanium"

Izv. VUZ, Tsvetnaya Metallurgiya, No 3, 1970, pp 114-121

Abstract: It has been shown that an increase in grain size increases the tendency of titanium and its alloys to hydrogen embrittlement. This work presents a study of the influence of grain size on the properties of titanium with various contents of hydrogen in order to determine the nature of this hydrogen embrittlement. Studies were performed using 5 mm wire with the composition: 0.05% C, 0.12% Fe, 0.12% Si, 0.13% O₂, 0.02% N₂, remainder Ti. The dependence of rupture stress on linear grain dimensions was found to follow the patch equation. The surface energy of titanium without hydrides is 1100-1200 erg/cm², the parameter $\sigma_0 = 73$ kg/mm². When rupture occurs along the hydride-titanium boundary, the surface energy is 300-500 erg/cm², the value of $\sigma_0 = 50$ kg/mm². When a large fraction of the grains include hydrides, rupture

1/2

USSR

KOLACHEV, B. A., et al., Izv VUZ, Tsvetnaya Metallurgiya, No 3, 1970, pp 114-121

occurs along the grain boundaries. When the rupture stress increases with increasing relative share of free grains to the point of rupture through the body of a grain, rupture becomes intracrystalline. Chains of etching holes are noted in the rupture zone, located along the axis of extension. These chains are related to the hydrides located on boundaries parallel to the axis of extension. These holes are not related to the cracks responsible for rupture. Rupture occurs due to formation of pores along boundaries perpendicular or nearly perpendicular to the axes of extension.

2/2

- 21 -

Titanium

USSR

UDC 669.295.5

K
KOLACHEV, B. A., LIVANOV, V. A. and ZHURAVLEV, L. N. (Moscow)

"On the Selection of the Composition of Titanium Alloys with a Negligible Tendency toward Hydrogen Brittleness"

Moscow, Izvestiya AN SSSR, Metally, No 3, May-Jun 70, pp 158-164

Abstract: The authors classify hydrogen brittleness of titanium alloys into two major groups. The first is determined by causes existing in the initial metal due to high hydrogen content. The second is determined by sources developing in metal with a high hydrogen content during plastic deformation. The tendency and the sensitivity of α and $(\alpha-\beta)$ titanium alloys to hydrogen brittleness are investigated. The influence of β -phase quantity on maximum hydrogen concentrations in $(\alpha+\beta)$ alloys in the development of both brittleness aspects is analyzed on the basis of available data. An expression is derived for the average hydrogen concentration in the $(\alpha+\beta)$ alloy at which the β -phase becomes brittle. The stabilizing effect of alloying metals is considered. It is stated in conclusion that: 1) the tendency of α -alloys to hydrogen brittleness can be reduced by increasing the aluminum content, which increases the solubility of hydrides in the α -phase; 2) the sensitivity of $(\alpha+\beta)$ alloys to hydrogen brittleness can be reduced by increasing the β -phase share, by increasing the critical hydrogen concentration in the β -phase, above which the embrittlement begins, and by reducing

USSR

KOLACHEV, B. A., et al., Izvestiya AN SSSR, Metally, No 3, May-Jun 70, pp 158-164
the correlation of hydrogen concentration in the β and α phases. All this can
be achieved by an appropriate selection of ($\alpha + \beta$) alloy composition or condi-
tions of their heat treatment.

2/2

1/2 033 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EFFECT OF HYDROGEN ON THE STRUCTURE AND PROPERTIES OF ALLOY VT5L
-U-

AUTHOR--(05)-KOLACHEV, B.A., KHODOROVSKIY, G.L., POPOV, A.A., BUKHANOVA,
A.A., SEDOV, V.I.
COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, 2, 29-30

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TITANIUM ALLOY, ALLOY DESIGNATION, ALLOY COMPOSITION, HYDROGEN
EMBRITTLEMENT, METAL CONTAINING GAS, GAS CONTAINING METAL, MECHANICAL
PROPERTY, HYDRIDE, METAL MICROSTRUCTURE/(U)VT5L TITANIUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1996/1678

STEP NO--UR/0128/70/002/000/0029/0030

CIRC ACCESSION NO--AP0118656

UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118656

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TI ALLOY CONTAINED AL 5.05-5.34, FE 0.08-0.14, SI 0.06, Z 0.04-0.1, N 0.015-0.017, C 0.09-0.10, AND H 0.003-0.006PERCENT. THE MECH. PROPERTIES WERE STUDIED AT MINUS 70 TO 20DEGREES FOR A H CONTENT OF 0.003-0.05PERCENT. AT THESE TEMPS. THE ALLOY BECAME BRITTLE WHEN THE H CONTENT WAS GREATER THAN 0.035PERCENT. HOWEVER, IF THE ALLOY WAS EXPOSED TO MINUS 60DEGREES FOR 3 DAYS IT BECAME BRITTLE AT LOWER H LEVELS. THE EMBRITTLEMENT WAS CAUSED BY HYDRIDE FORMATION, WHICH WAS OBSD. IN THE MICROSTRUCTURE WHEN THE H CONTENT EXCEEDED THE SOLY. LIMIT. THE STRENGTH OF THE ALLOY INCREASED AS THE H CONTENT INCREASED TO 0.015PERCENT, BUT AT A H LEVEL ABOVE THIS VALUE THE STRENGTH DECREASED.

UNCLASSIFIED

1/2 035 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--SELECTION OF THE CHEMICAL COMPOSITION OF TITANIUM ALLOYS WITH A LOW
SUSCEPTIBILITY TO HYDROGEN INDUCED BRITTLENESS -U-
AUTHOR-(03)-KOLACHEV, B.A., LIVANDV, V.A., ZHURAYLEV, L.N.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR. IZVESTIIA METALLY, MAY-JUNE 1970, P 158-164

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--HYDROGEN EMBRITTLEMENT, BIBLIOGRAPHY, TITANIUM ALLOY, HYDRIDE,
BETA PHASE, METAL HEAT TREATMENT, CHEMICAL COMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605011/E11 STEP NO--UR/0370/70/000/000/0158/0164

CIRC ACCESSION NO--AP0140218

INFO ACCEIVED

2/2 035

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140218

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REVIEW OF THE POSSIBLE CAUSES OF HYDROGEN INDUCED BRITTLENESS OF TITANIUM ALLOYS AND METHODS OF ITS PREVENTION. IT IS STATED THAT SUSCEPTIBILITY OF THESE ALLOYS TO HYDROGEN INDUCED BRITTLENESS CAN BE DECREASED BY INCREASING THE ALUMINUM CONTENT WHICH ENHANCES THE SOLUBILITY OF HYDRIDES IN THE BETA PHASE. SUSCEPTIBILITY OF ALPHA PLUS BETA ALLOYS TO HYDROGEN INDUCED BRITTLENESS CAN BE DECREASED BY THE FOLLOWING METHODS: (1) INCREASING THE AMOUNT OF THE BETA PHASE. (2) INCREASING THE CRITICAL CONCENTRATION OF HYDROGEN IN THE BETA PHASE (ABOVE WHICH THIS PHASE BEGINS TO BE BRITTLE). (3) DECREASING THE CONCENTRATION RATIO OF HYDROGEN IN THE ALPHA AND BETA PHASES. THIS CAN BE ACHIEVED BY SUITABLE SELECTION OF THE CHEMICAL COMPOSITION OF ALPHA PLUS BETA ALLOYS, OR BY SUBJECTING THESE ALLOYS TO HEAT TREATMENT UNDER SPECIALIZED CONDITIONS.

UNCLASSIFIED

USSR

UDC 669.295.620.184:620.187.5

KOLACHEV, B. A., SEDOV, V. I., MAL'KOV, A. V., Moscow Institute of Aviation Technology

"Influence of Hydrogen on Structure of Fractures in OT4 Titanium Alloy"

Kiev, Fiziko-khimicheskaya Mekhanika Materialov, Vol 8, No 3, 1972, pp 80-82.

Abstract: This work is an attempt to estimate the influence of hydrogen absorbed by the metal on the fracture structure of specimens of OT4 titanium alloy (2.95% Al; 1.41% Mn; 0.14% Fe; 0.11% Si; 0.0044% H₂; 0.07% C; 0.081% O₂; 0.0046% N₂) during impact testing. The differences in the nature of the fracture are most clearly seen under the electron microscope. With hydrogen concentrations of not over 0.008 wt.% the microrelief is dominated by long "holes" and "ridges," the mean diameter of a "hole" decreasing with increasing hydrogen content. The "holes" cover about 80% of the surface. As the hydrogen content increases to 0.012 wt.%, the percentage of ductile fracture ("holes") decreases significantly, as the increased concentration of hydrogen seems to influence the ability of individual microvolumes of the material for plastic deformation. An increase in hydrogen content to 0.03 wt.% reduces

1/2

USSR .

UDC 669.295.620.184:620.187.5

KOLACHEV, B. A., SEDOV, V. I., MAL'KOV, A. V., Kiev, Fiziko-khimicheskaya Mekhanika Materialov, Vol 8, No 3, 1972, pp 80-82.

impact toughness by a factor of 3, causing the appearance of areas of inter-grain fracture. Hydrogen begins to influence impact toughness significantly at about 0.012 wt.%.

2/2

- 49 -

Heat Treatment

USSR

UDC 669.2:620.18+621.785

KOLACHEV, B. A., LIVANOV, V. A., and YELAGIN, V. I.

Metallovedeniye i Termicheskaya Obrabotka Tsvetnykh Metallov i Splavov
(Metallurgy and Heat Treatment of Nonferrous Metals and Alloys), Izdatel'-
stvo Metallurgiya, Moscow, 1972, 480 pp

Translation of Annotation: The book deals with the general problems of metallurgy and heat treatment of nonferrous metals, such as aluminum, magnesium, copper, titanium, zirconium, beryllium, high-melting metals, and their alloys. Among the topics discussed are the structural and mechanical properties of nonferrous metals, as well as corrosion stability, physical properties, technology of metals and alloys, and the application of these metals in the economy. The book presents supplementary reading material for students specializing in metallurgy and can be useful to metallurgists, technologists, and engineers dealing with the application and treatment of nonferrous metals and alloys.

Table of Contents

Page

Introduction
1/9

6

USSR

KOLACHEV, B. A., et al., Metallovedeniye i Termicheskaya Obrabotka Tsvetnykh Metallov i Splavov (Metallurgy and Heat Treatment of Nonferrous Metals and Alloys), Izdatel'stvo Metallurgiya, Moscow, 1972, 480 pp

| | Page |
|--|------|
| Chapter 1. Aluminum and Its Alloys | |
| 1. General Information | 7 |
| 2. Properties of Aluminum | 8 |
| 3. Features of the Interaction of Aluminum With Alloying Elements and Impurities | 13 |
| 4. Structure and Properties of Cast Aluminum Alloys..... | 15 |
| 5. Hot and Cold Pressure Treatment of Aluminum Alloys ... | 24 |
| 6. General Characteristic of Types of Heat Treatment of Aluminum Alloys | 35 |
| 7. Annealing | 36 |
| 8. Hardening | 48 |
| 9. Aging | 53 |
| 10. Recovery During Aging | 61 |
| 11. Structural Strengthening of Aluminum Alloys. Press-Effect | 63 |
| 12. Classification of Aluminum Alloys | 70 |
| 13. Commercial Aluminum..... | 80 |
| 14. Thermally Unstrengthenable Deformed Alloys | 90 |

2/9

USSR

KOLACHEV, B. A., et al., Metallovedeniye i Termicheskaya Obrabotka Tsvetnykh Metallov i Splavov (Metallurgy and Heat Treatment of Nonferrous Metals and Alloys), Izdatel'stvo Metallurgiya, Moscow, 1972, 480 pp

| | Page |
|---|------|
| 15. Deformable Alloys Which Can be Strengthened by Heat Treatment..... | 99 |
| 16. Cast Aluminum Alloys | 149 |
| 17. Special Aluminum Alloys | 169 |
| 18. Application of Aluminum and Its Alloys | 179 |
| References..... | 181 |
| Chapter 2. Magnesium and Its Alloys | |
| 1. General Information | 181 |
| 2. Properties of Magnesium | 183 |
| 3. Industrial Production Features of Intermediate Products | 185 |
| 4. Interaction of Magnesium With Alloying Elements and Impurities | 187 |
| 5. Heat Treatment of Magnesium Alloys | 189 |
| 6. Classification of Magnesium Alloys | 193 |
| 7. Commercial Magnesium | 194 |
| 8. Deformable Magnesium Alloys | 196 |
| 9. Cast Magnesium Alloys | 205 |

USSR

KOLACHEV, B. A., et al., Metallovedeniye i Termicheskaya Obrabotka Tsvetnykh Metallov i Splavov (Metallurgy and Heat Treatment of Nonferrous Metals and Alloys), Izdatel'stvo Metallurgiya, Moscow, 1972, 480 pp

| | |
|---|------|
| | Page |
| 10. Application of Magnesium and Its Alloys | 209 |
| References | 210 |

| | |
|---|-----|
| Chapter 3. Copper and Its Alloys | 210 |
| 1. General Information | 211 |
| 2. Properties of Copper | |
| 3. Industrial Production Features of Copper Intermediate Products | 213 |
| 4. Interaction of Copper With Alloying Elements and Impurities | 214 |
| 5. Effect of Impurities on the Structure and Properties of Copper | 217 |
| 6. Commercial Copper | 224 |
| 7. Classification of Copper Alloys | 226 |
| 8. Brasses | 227 |
| 9. Tin Bronze | 240 |
| 10. Aluminum Bronze | 249 |

4/9

USSR

KOLACHEV, B. A., et al., Metallovedeniye i Termicheskaya Obrabotka Tsvetnykh Metallov i Splavov (Metallurgy and Heat Treatment of Nonferrous Metals and Alloys), Izdatel'stvo Metallurgiya, Moscow, 1972, 480 pp

| | Page |
|--|------|
| 11. Lead Bronze | 258 |
| 12. Manganese Bronze | 260 |
| 13. Silicon Bronze | 261 |
| 14. Beryllium Bronze | 262 |
| 15. Copper-Nickel Alloys | 264 |
| 16. Special Copper Alloys | 269 |
| 17. Application of Copper and Its Alloys | 274 |
| References | 276 |
| Chapter 4. Titanium and Its Alloys | |
| 1. General Information | 277 |
| 2. Properties of Titanium | 278 |
| 3. Corrosion Stability of Titanium | 283 |
| 4. Industrial Production Features of Titanium Intermediate Products | 286 |
| 5. Interaction of Titanium With Alloying Elements and Impurities | 290 |

5/9